

# Atlantic Richfield Company

**Anthony R. Brown**  
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August 9, 2017

Ms. Lynda Deschambault  
U.S. EPA Region 9  
75 Hawthorne Street (SFD-7-2)  
San Francisco, CA 94105

**RE: Leviathan Monthly Report for July 2017**

Dear Ms. Deschambault:

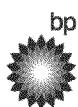
The following text describes activities conducted during the month of July 2017 at the Leviathan Mine Site (site) and activities anticipated to occur during the upcoming month. These activities are organized by work area [Aspen Seep, Channel Underdrain (CUD) and Delta Seep (DS)], and site-wide tasks. This progress report is being submitted in accordance with Paragraph 62 of the Administrative Settlement Agreement and Order on Consent for Removal Action (AOC) (effective January 21, 2009).

## ACTIVITIES FOR JULY

### Aspen Seep

- Operated the Aspen Seep Bioreactor (ASB) Treatment System in recirculation mode during the month of July with the exception that discharge to Aspen Creek was stopped between June 20, 2017 and July 2, 2017 and again between July 10, 2017 and July 13, 2017 while solids management activities were completed in Pond 4. Containment/treatment of Aspen Seep flows was maintained during these intervals.
- Weekly routine operations and maintenance (O&M) activities were conducted during the month of July 2017.
- On July 11, 2017, solids were transferred from Pond 3 to Pond 4. Filtrate from solids management activities was brought to Pond 4 for finishing prior to discharge.
- Routine operations and maintenance (O&M), influent sampling, and effluent sampling occurred on July 13, 2017. The current available influent and effluent water quality data for the July 13, 2017 sampling events are presented in Table 1. Recent influent flow rate, pH, and ORP field data are summarized in Table 2.

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- On July 27, 2017, solids were pumped from Pond 4 to the solids management area near the Aspen Gate.
- On July 28, 2017, filtrate from dewatering bins was discharged to Aspen Creek following verification of surrogate field parameters. Filtrate samples were also collected on July 28, 2017 for laboratory analysis. Lab results will be presented when available.
- On July 29, 2017, the backup pipe-line between the influent weir and Manhole 6 was replaced because of scale formation that limited the flow rate through the pipe.
- On July 30, 2017, maintenance on the Aspen Seep Collection area was performed to minimize ponding in the collection area prior to entering the weir.

### **CUD and DS**

- Field demonstration of Amendment No. 2 to the Interim Combined Acid Drainage Treatability Investigation Work Plan began the week of July 5, 2017. The weekly activities summaries provided to EPA are as follows:
  - July 5, 2017 through July 14, 2017 weekly summary provided by email on July 21, 2017 from Atlantic Richfield to US EPA.
  - July 15, 2017 through July 21, 2017 weekly summary provided by email on July 27, 2017 from Atlantic Richfield to US EPA.
  - July 22, 2017 through July 28, 2017 weekly summary provided by email on August 2, 2017 from Atlantic Richfield to US EPA.
- Compliance sampling was completed on July 19, 2017 for the High Density Sludge (HDS) Treatment Plant influent and effluent, CUD, and DS. Flow rates recorded for the CUD, DS, and treated water discharge from the HDS Treatment Plant are included in Table 3. A summary of the HDS Treatment Plant operational data for July 2017 is presented in Table 4. The analytical results from the June 21, 2017 and July 19, 2017 sampling events are presented in Table 5.
- On July 7, 2017, a diesel delivery was received at the HDS Treatment Plant.
- On July 7, 2017 and July 8, 2017, lime deliveries were received at the HDS Treatment Plant.
- On July 14, 2017, Atlantic Richfield submitted to US EPA a Waste Material Off-Site Shipment Notification Letter for disposal of miscellaneous waste generated from the HDS Treatment Plant. The waste was shipped off site on July 18, 2017.
- On July 19, 2017, Atlantic Richfield submitted to US EPA a Waste Material Off-Site Shipment Notification Letter for disposal of HDS Generated Solids during the Interim Combine Treatment (ICT) demonstration. The waste was shipped off-site on July 19, 2017, July 24, 2017, and July 26, 2017.

### **Site-wide**

- Work continued on updating the Leviathan Mine Project Database with data from Atlantic Richfield and various agencies.
- Completed road maintenance activities on the Nevada Access Roads including grading to minimize wash boards.

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- On July 18, 2017, a conference call was conducted with the U.S. EPA to provide a general progress update.
- Throughout the month of July, an exclusion zone was incorporated to moderate the potential risks to site personnel caused by the instability on the Crusher Road slope east and above Pond 4. Atlantic Richfield continued to implement its slope stability monitoring program and reported the associated measurements and observations to the LRWQCB and U.S. EPA on July 12, 13, 18, 21, and 31, 2017

## ACTIVITIES FOR UPCOMING MONTH

### Aspen Seep

- Continue operation of the ASB Treatment System in recirculation mode and continue monitoring and maintenance items outlined in the amended RAWP.
- Continue solids management.

### CUD and DS

- Continue Interim Combined Treatment (ICT) demonstration, by blending waters from the Upper Ponds with CUD and DS water stored in Pond 4.
- Continue HDS Treatment System routine O&M of the HDS Treatment System as outlined in the RAWP.
- Dispose of dewatered sludge in dewatering bins pending characterization results.
- Receive lime delivery.

### Site-wide

- Continue to provide project progress updates to the U.S. EPA via conference call. The next conference call is currently scheduled for August 15, 2017.
- Continue road work as well as maintenance of BMPs for storm water management.

If you have any questions or comments, please feel free to contact me at (657) 529-4537 or via e-mail at [Anthony.Brown@bp.com](mailto:Anthony.Brown@bp.com).

Sincerely,



for

Tony Brown  
Project Manager

Attachments:

Table 1 – Aspen Seep Bioreactor Treatment System – Compliance Sample Results

Table 2 – Aspen Seep Bioreactor Treatment System – Recent Flow, pH, and ORP Field Measurements

Table 3 – Channel Underdrain, Delta Seep, and HDS Treatment Plant – Flow Rates

Table 4 – High Density Sludge Treatment Plant – Operational Data Summary

Table 5 - High Density Sludge Treatment Plant – Compliance Sample Results

cc: Douglas Carey, Lahontan Regional Water Quality Control Board

Scott Ferguson, Lahontan Regional Water Quality Control Board

Ronald Halsey, Atlantic Richfield Company

Nathan Block, BP

Jack Marjerison, Atlantic Richfield Company

Reginald Iiao, Atlantic Richfield Company

Adam Cohen, Esq., Davis Graham & Stubbs LLP

Dave McCarthy, Copper Environmental Consulting

Marc Lombardi, Amec Foster Wheeler Environment & Infrastructure, Inc.

Sandy Riese, EnSci, Inc.

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3DUDPHWHU	%DVLV	-XCH <sup>L</sup> + <sup>L</sup> &8' + <sup>L</sup> &KOOCH <sup>L</sup> 8QCHLGUDLQ PJ↓ /	-XCH <sup>L</sup> + <sup>L</sup> &8' + <sup>L</sup> &KOOCH <sup>L</sup> 'HND <sup>L</sup> 6HS PJ↓ /	-XCH <sup>L</sup> + <sup>L</sup> &8' + <sup>L</sup> &KOOCH <sup>L</sup> 'HND <sup>L</sup> 6HS RI <sup>L</sup> 3RQG <sup>L</sup> PJ↓ /	-XCH <sup>L</sup> + <sup>L</sup> &8' + <sup>L</sup> &KOOCH <sup>L</sup> 'HND <sup>L</sup> 6HS RI <sup>L</sup> 3RQG <sup>L</sup> PJ↓ /	-XCH <sup>L</sup> + <sup>L</sup> &8' + <sup>L</sup> &KOOCH <sup>L</sup> 'HND <sup>L</sup> 6HS RI <sup>L</sup> 3RQG <sup>L</sup> PJ↓ /	-XCH <sup>L</sup> + <sup>L</sup> &8' + <sup>L</sup> &KOOCH <sup>L</sup> 'HND <sup>L</sup> 6HS RI <sup>L</sup> 3RQG <sup>L</sup> PJ↓ /	-XCH <sup>L</sup> + <sup>L</sup> &8' + <sup>L</sup> &KOOCH <sup>L</sup> 'HND <sup>L</sup> 6HS RI <sup>L</sup> 3RQG <sup>L</sup> PJ↓ /	-XCH <sup>L</sup> + <sup>L</sup> &8' + <sup>L</sup> &KOOCH <sup>L</sup> 'HND <sup>L</sup> 6HS RI <sup>L</sup> 3RQG <sup>L</sup> PJ↓ /	-XCH <sup>L</sup> + <sup>L</sup> &8' + <sup>L</sup> &KOOCH <sup>L</sup> 'HND <sup>L</sup> 6HS RI <sup>L</sup> 3RQG <sup>L</sup> PJ↓ /	-XCH <sup>L</sup> + <sup>L</sup> &8' + <sup>L</sup> &KOOCH <sup>L</sup> 'HND <sup>L</sup> 6HS RI <sup>L</sup> 3RQG <sup>L</sup> PJ↓ /
S+ <sup>L</sup> ♂ V <sup>L</sup> X <sup>L</sup> □	)LHDG	— <sup>L</sup> — <sup>L</sup> ♀	— <sup>L</sup> — <sup>L</sup> ↑	— <sup>L</sup> — <sup>L</sup> + <sup>L</sup>							
\$OXPLOXP	'LWRQYH	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>
\$UHQH	'LWRQYH	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>
&DGPLXP	'LWRQYH	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>
&DOFLXF	'LWRQYH	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>
&KCRULG	7RND	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>
&KURPLXP	'LWRQYH	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>
&RSSHU	'LWRQYH	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>
+DUGQHM	'LWRQYH	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>
,UR	'LWRQYH	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>
/HDG	'LWRQYH	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>
0DJQHMLXP	'LWRQYH	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>
1LFNH	'LWRQYH	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>
6HCHQLXF	7RND	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>
6XOIDV	7RND	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>
=LQF	'LWRQYH	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>
\$FLGLV	7RND	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>
\$ONDOLQWM <sup>L</sup> ♂ %LFDE	7RND	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>
\$ONDOLQWM <sup>L</sup> ♂ &DE	7RND	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>
\$ONDOLQWM <sup>L</sup> ♂ +\GUF	7RND	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>
\$ONDOLQWM <sup>L</sup> ♂ .	7RND	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>
7RND <sup>L</sup> 6XVSHQHG <sup>L</sup> 6RDQGV	7RND	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>	— <sup>L</sup> — <sup>L</sup>

1RWH  
 S+<sup>L</sup> YDOXH<sup>L</sup> DUH<sup>L</sup> LHDG<sup>L</sup> PHDXUHPHQW<sup>L</sup> DQG<sup>L</sup> DUH<sup>L</sup> UHSRUWHG<sup>L</sup> LQ<sup>L</sup> WADG  
 —<sup>L</sup> —<sup>L</sup> ♂ LVRKDUJH<sup>L</sup> FULWHD<sup>L</sup> DQG<sup>L</sup> EDVLY<sup>L</sup> IRU<sup>L</sup> PD[L]PXP<sup>L</sup> DQG<sup>L</sup> DYHDDJH<sup>L</sup> YDOXH  
 5HTXHW<sup>L</sup> IRU<sup>L</sup> SSURYDOL<sup>L</sup> RI<sup>L</sup> ORGL<sup>L</sup> LFDWLQ<sup>L</sup> WR<sup>L</sup> WKH<sup>L</sup> 5HRYDOL<sup>L</sup> \$FWLRQ<sup>L</sup> DW<sup>L</sup>  
 OLQH<sup>L</sup> OHPRUDQGP<sup>L</sup> ♂ 8<sup>L</sup> 6<sup>L</sup> (3\$<sup>L</sup> L<sup>L</sup> !! <sup>L</sup> ← <sup>L</sup> □  
 SEEUHLDWLRQV  
 8<sup>L</sup> +<sup>L</sup> &RQWVWKHQW<sup>L</sup> WKDW<sup>L</sup> ZH<sup>L</sup> GRW<sup>L</sup> GHWHFHG<sup>L</sup> DUH<sup>L</sup> OLW<sup>L</sup> DV<sup>L</sup> | | | L DQG<sup>L</sup> WKH<sup>L</sup> UHSRUWLQJ<sup>L</sup> OLPLW<sup>L</sup>  
 LV<sup>L</sup> VARZQ<sup>L</sup>  
 —<sup>L</sup> +<sup>L</sup> 5HMXOW<sup>L</sup> GRW<sup>L</sup> ZLWK<sup>L</sup> | | | L DUH<sup>L</sup> DQ<sup>L</sup> HWA<sup>L</sup> PDW<sup>L</sup> HG<sup>L</sup> YDOXH<sup>L</sup> RU<sup>L</sup> ZH<sup>L</sup> GRW<sup>L</sup> CHW<sup>L</sup> WKDQ<sup>L</sup> WKH<sup>L</sup> UHSRUWLQJ<sup>L</sup>  
 OLPLW<sup>L</sup> EXW<sup>L</sup> JUH<sup>L</sup> WKH<sup>L</sup> RU<sup>L</sup> HXDO<sup>L</sup> WR<sup>L</sup> WKH<sup>L</sup> PHW<sup>L</sup> GHWHFHG<sup>L</sup> OLPLW<sup>L</sup>  
 %<sup>L</sup> +<sup>L</sup> &RPSRQG ZDV<sup>L</sup> GHWHFHG<sup>L</sup> LQ<sup>L</sup> WKH<sup>L</sup> EODQNL<sup>L</sup> DQG<sup>L</sup> LQ<sup>L</sup> WKH<sup>L</sup> VDPSC<sup>L</sup>  
 +<sup>L</sup> +<sup>L</sup> 6DPSCH<sup>L</sup> ZDV<sup>L</sup> SUHSSHG<sup>L</sup> RU<sup>L</sup> DQDQV<sup>L</sup>]HGL<sup>L</sup> EH\RG<sup>L</sup> WKH<sup>L</sup> VSHFLI<sup>L</sup> HG<sup>L</sup> KROGQJ<sup>L</sup> WLPH<sup>L</sup>  
 PJ↓ / L +<sup>L</sup> PLOORJUDPV<sup>L</sup> SHU<sup>L</sup> OLW<sup>L</sup>  
 13<sup>L</sup> +<sup>L</sup> 1RW<sup>L</sup> 3URPXOUDW<